

REMARKS

I. STATUS OF CLAIMS

Claims 1-12 are currently pending.

II. REJECTION OF CLAIMS OVER SHARMA (USP 6,081,355) BY ITSELF OR IN COMBINATION WITH OTHER REFERENCES

Claim 1 recites time-division multiplexing the optical pulses output by said optical pulse source by branching the optical pulses output by said optical pulse source to N paths and multiplexing the branched optical pulses so as to output optical pulses with a repetition frequency which is an integral multiple of said designated repetition frequency f_0 , wherein a time difference among the respective paths is $1/(N \cdot f_0)$, *and so that intensities and polarization states of the branched optical pulses are equal after being multiplexed.*

See, for example, in FIG. 5, and the disclosure on page 9, line 25, through page 10, line 4, of the specification.

Therefore, claim 1 specifically recites that *intensities and polarization states of the branched optical pulses are equal after being multiplexed.* In item 9 on page 7 of the outstanding Office Action, the Examiner asserts that the pulse diagram at the output of the star coupler 62 in FIG. 9 of Sharma shows "uniform height and co-planar characteristics of the pulses". The Examiner then asserts that this showing of uniform height and co-planar characteristics implies equal intensities and polarization states.

However, it is respectfully submitted that the pulse diagram in FIG. 9 of Sharma is a rough drawing and is not intended to show features such as equal intensities. As an example, as different pulses travel the different paths $1/N$, $2/N$ and $3/N$ shown in FIG. 9 of Sharma, the pulses traveling one of the paths would have small differences in intensity as compared to different pulses traveling a different path, due to the differences in lengths of the different paths. These small differences in intensities would be too small to be seen in the rough pulse diagram in FIG. 9 of Sharma.

Therefore, it is respectfully submitted that Sharma does not disclose or suggest that intensities of the branched optical pulses are equal after being multiplexed as recited, for example, in claim 1.

Please note that, in FIG. 9 of Sharma, there are no mechanisms inserted in the different paths $1/N$, $2/N$, $3/N$ to ensure equal intensities of pulses traveling the different paths.

The above-comments are specifically directed to claim 1. However, it is respectfully

submitted that the comments would be helpful in understanding various differences of various other claims over the cited reference.

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Claim 12 specifically recites a variable optical attenuator and a variable optical delay unit arranged in each path, so that the intensities and the polarization states of the branched optical pulses are equal after being multiplexed. See, for example, in FIG. 5, and the disclosure on page 9, line 25, through page 10, line 4, of the specification.

For example, FIG. 5 discloses a variable optical attenuator 43, 44 and a variable optical delay unit 45, 46 arranged in each path.

In contrast, FIG. 9 of Sharma is clear in that there are no mechanisms inserted in the different paths 1/N, 2/N, 3/N.

On page 7 of the Office Action, the Examiner asserts that it would be obvious to include a variable optical attenuator in each path of Sharma "to provide fine amplitude/intensity control of each optical pulse". However, Sharma does not recognize any problems associated with fine differences in amplitude/intensity. Moreover, the Examiner has not shown any references which suggest any problems associated with fine differences in amplitude/intensity in a configuration as in Sharma. Moreover, FIG. 9 of Sharma is clear in that there are no mechanisms inserted in the different paths 1/N, 2/N, 3/N. Therefore, any insertion of a variable optical attenuator would be contrary to that shown in Sharma, and may cause complications with the specific operation of Sharma. For example, column 10, lines 22-31, of Sharma, disclose specific delaying times of each path. Any insertion of optical attenuators in Sharma will significantly alter these delay times of Sharma, and cause problems with the operation of Sharma.

Moreover, on page 7 of the Office Action, the Examiner asserts that it would be obvious to include a variable delay unit in each path of Sharma "to relieve the need to control the precise length of each path, thus easing manufacturing tolerances." However, as disclosed in column 10, lines 22-31, of Sharma, relatively delays are created by using different path lengths. The insertion of a variable delay unit in each path of Sharma would be contrary to the approach of Sharma. Moreover, any insertion of variable delay units in Sharma will significantly alter the delay times of the paths of Sharma, and cause problems with the operation of Sharma.

Instead, the applicant again notes that FIG. 9 of Sharma is clear in there are no mechanisms inserted in the different paths 1/N, 2/N, 3/N.

Therefore, it is respectfully submitted that claim 12 is patentable over Sharma.

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In view of the above, it is respectfully submitted that the rejection is overcome.

III. CONCLUSION

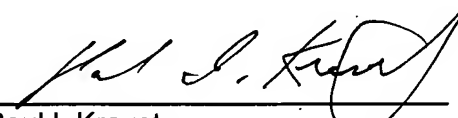
In view of the above, it is respectfully submitted that the application is in condition for allowance, and a Notice of Allowance is earnestly solicited.

If any further fees are required in connection with the filing of this response, please charge the fees to our Deposit Account No. 19-3935.

Respectfully submitted,

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